FIG. 1

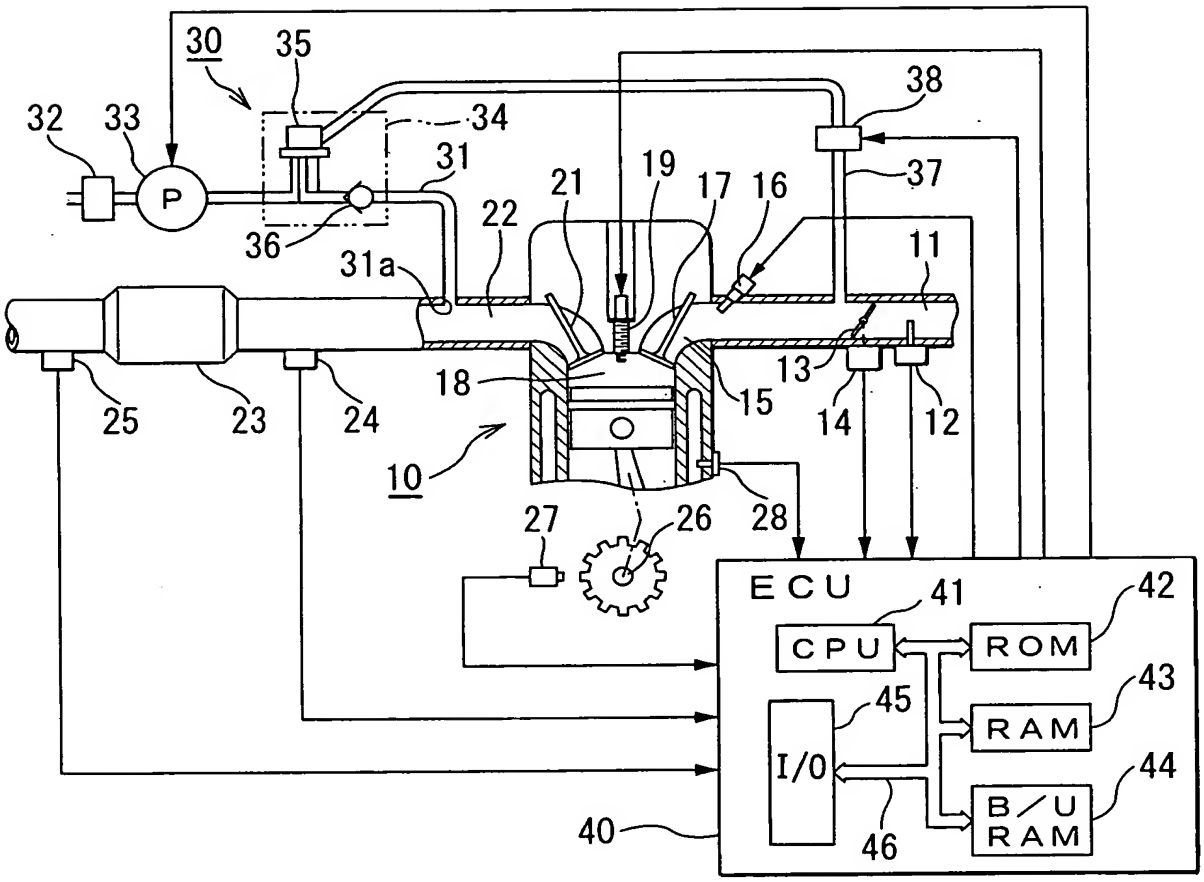
30
35
38
32
33
34
31
37
P
21
19
17
16
22
36
31a
11
18
13
15
25
23
24
14
12
10
27
26
28
ECU
41
42
CPU
ROM
45
43
I/O
RAM
44
B/U
RAM
40
46

FIG. 2

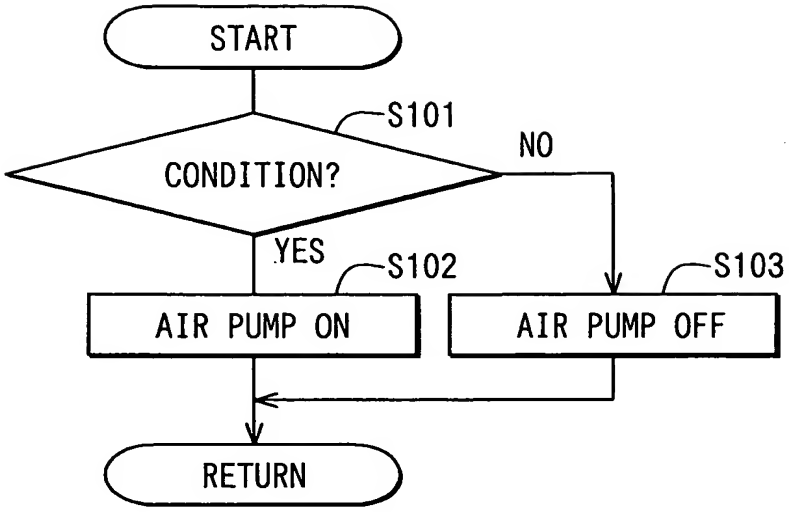
START
S101
CONDITION?
NO
YES
S102
S103
AIR PUMP ON
AIR PUMP OFF
RETURN

FIG. 3

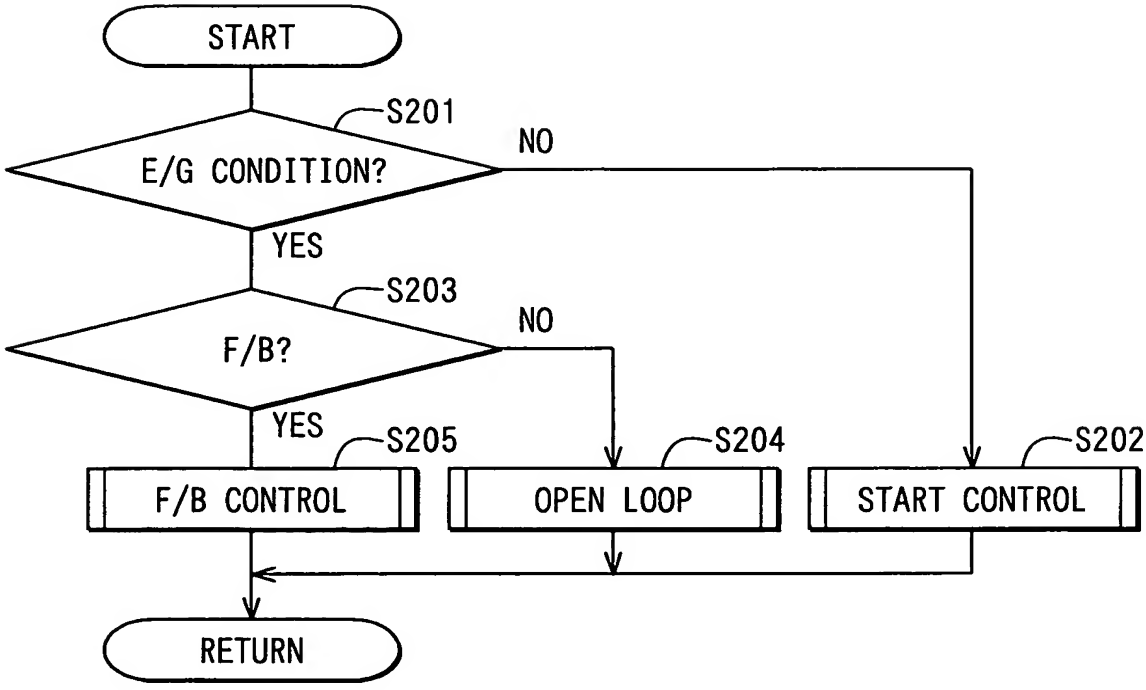
START
S201
E/G CONDITION?
NO
YES
S203
F/B?
NO
YES
S205
S204
S202
F/B CONTROL
OPEN LOOP
START CONTROL
RETURN

FIG. 4

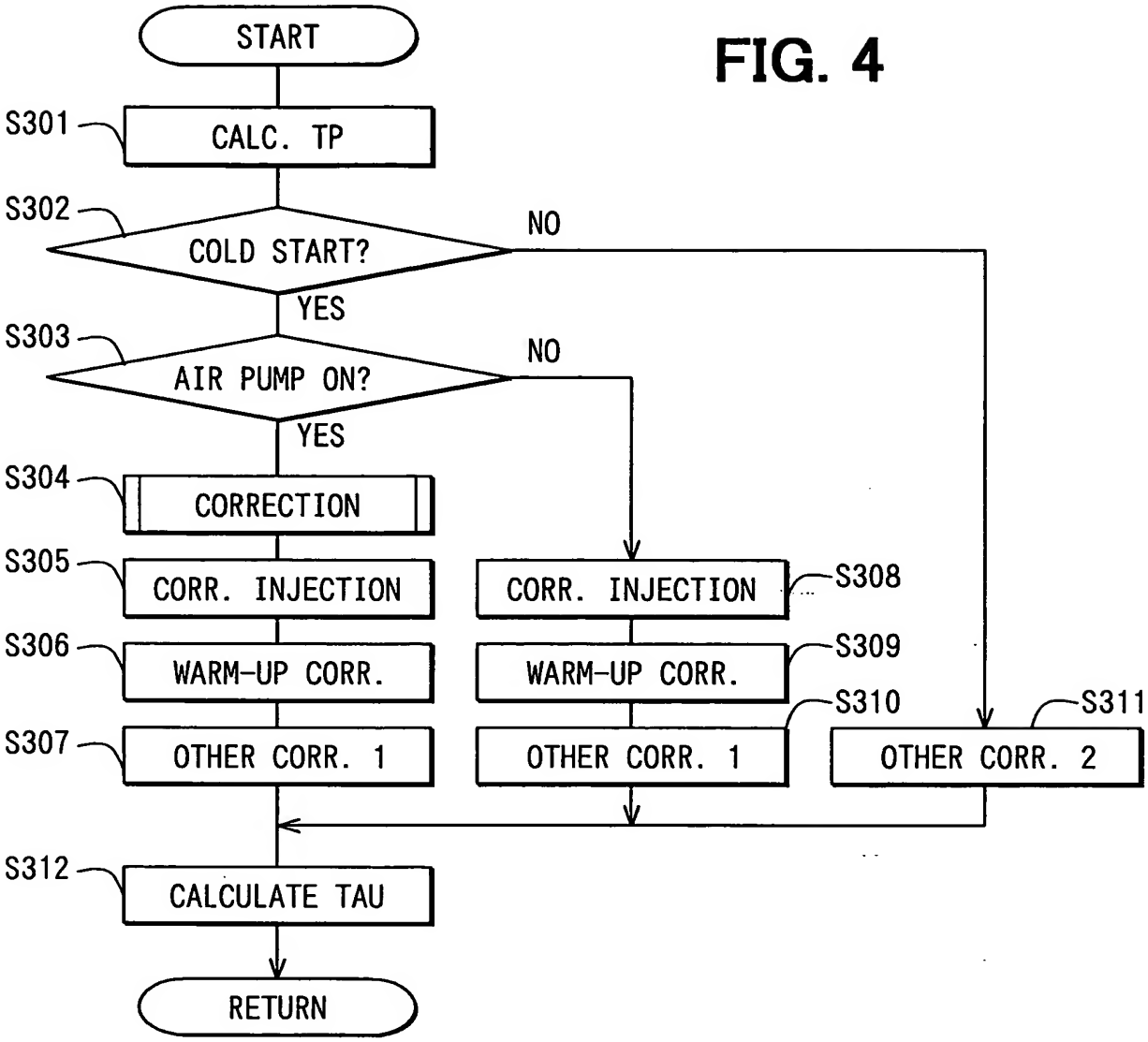
START
S301
CALC. TP
S302
COLD START?
NO
YES
S303
AIR PUMP ON?
NO
YES
S304
CORRECTION
S305
CORR. INJECTION
S306
WARM-UP CORR.
S307
OTHER CORR. 1
S308
CORR. INJECTION
S309
WARM-UP CORR.
S310
OTHER CORR. 1
S311
OTHER CORR. 2
S312
CALCULATE TAU
RETURN

FIG. 5

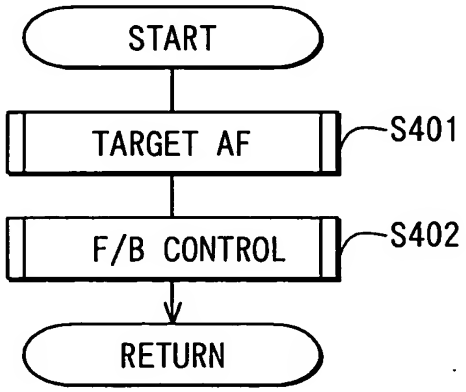
START
TARGET AF
S401
F/B CONTROL
S402
RETURN

FIG. 6

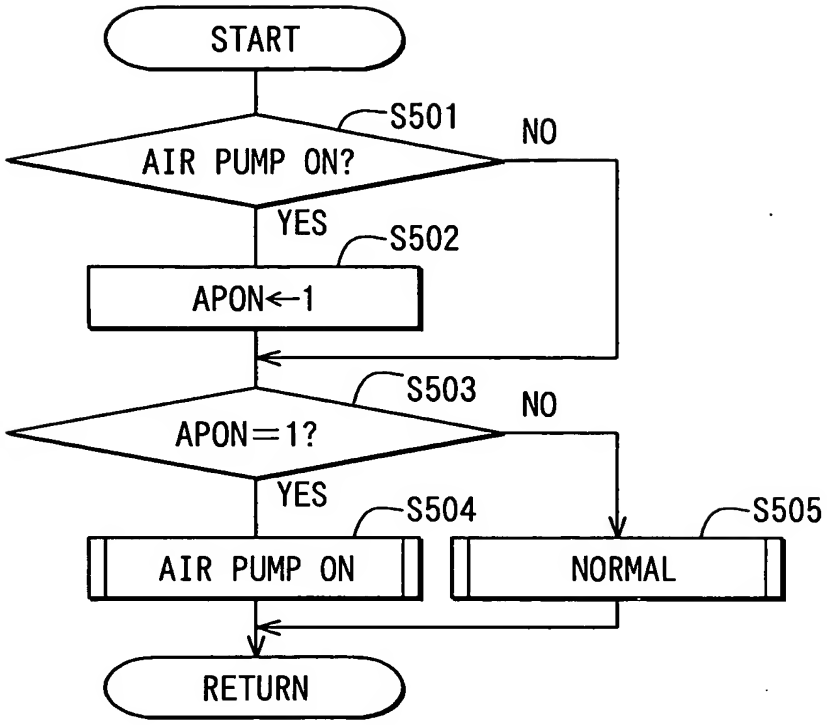
START
S501
AIR PUMP ON?
NO
YES
S502
APON←1
S503
APON=1?
NO
YES
S504
AIR PUMP ON
S505
NORMAL
RETURN

FIG. 7

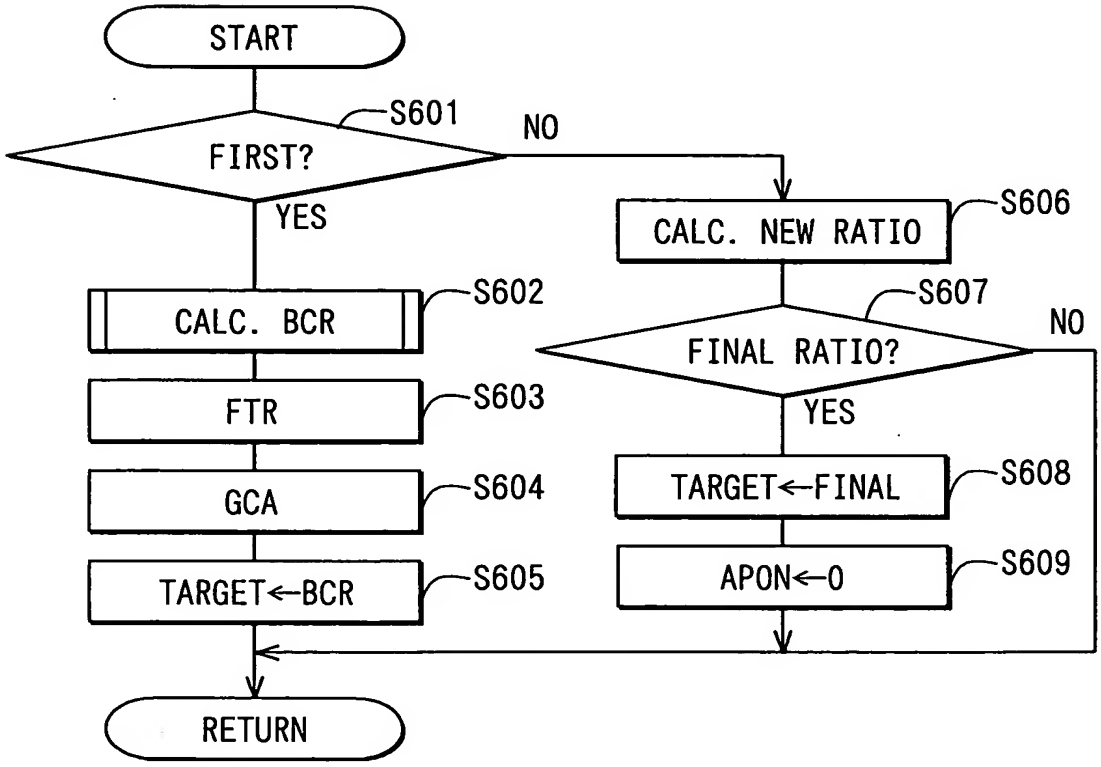
START
S601
FIRST?
NO
YES
S606
CALC. NEW RATIO
S602
CALC. BCR
S607
FINAL RATIO?
NO
S603
FTR
YES
S604
GCA
S608
TARGET←FINAL
S605
TARGET←BCR
S609
APON←0
RETURN

FIG. 8A

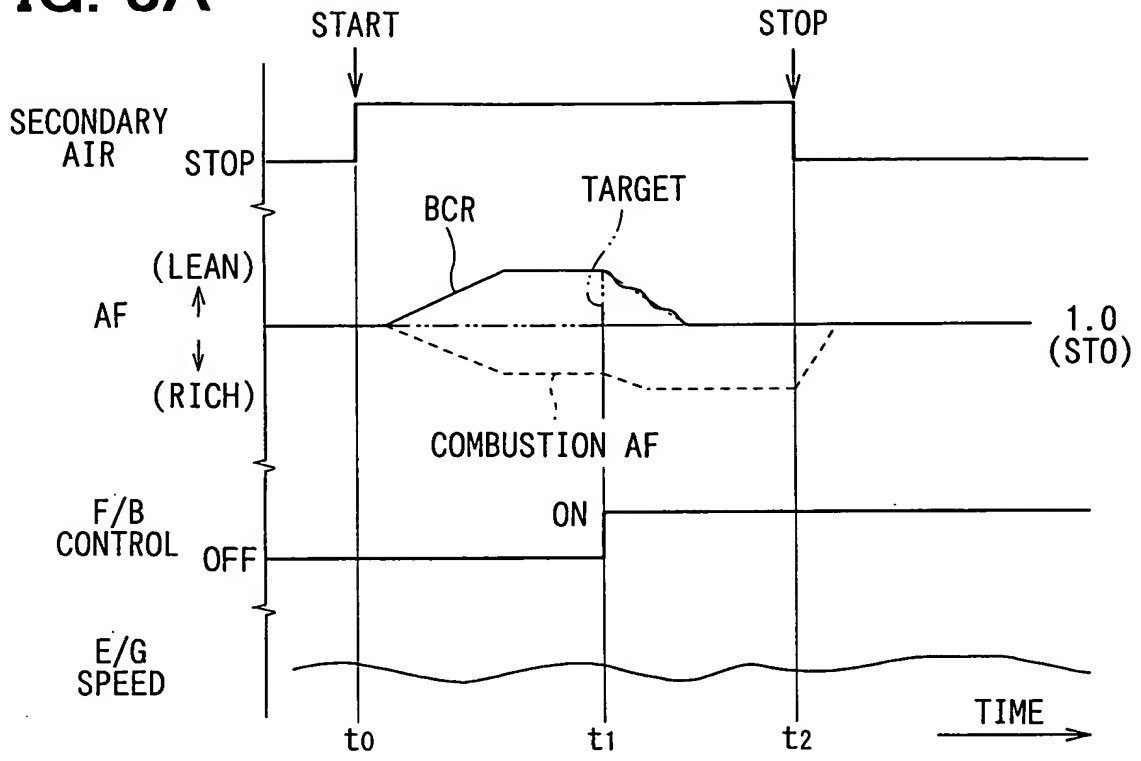
START
STOP
SECONDARY AIR
STOP
BCR
TARGET
(LEAN)
AF
(RICH)
1.0 (STO)
COMBUSTION AF
F/B CONTROL
ON
OFF
E/G SPEED
TIME
t0
t1
t2

FIG. 8B

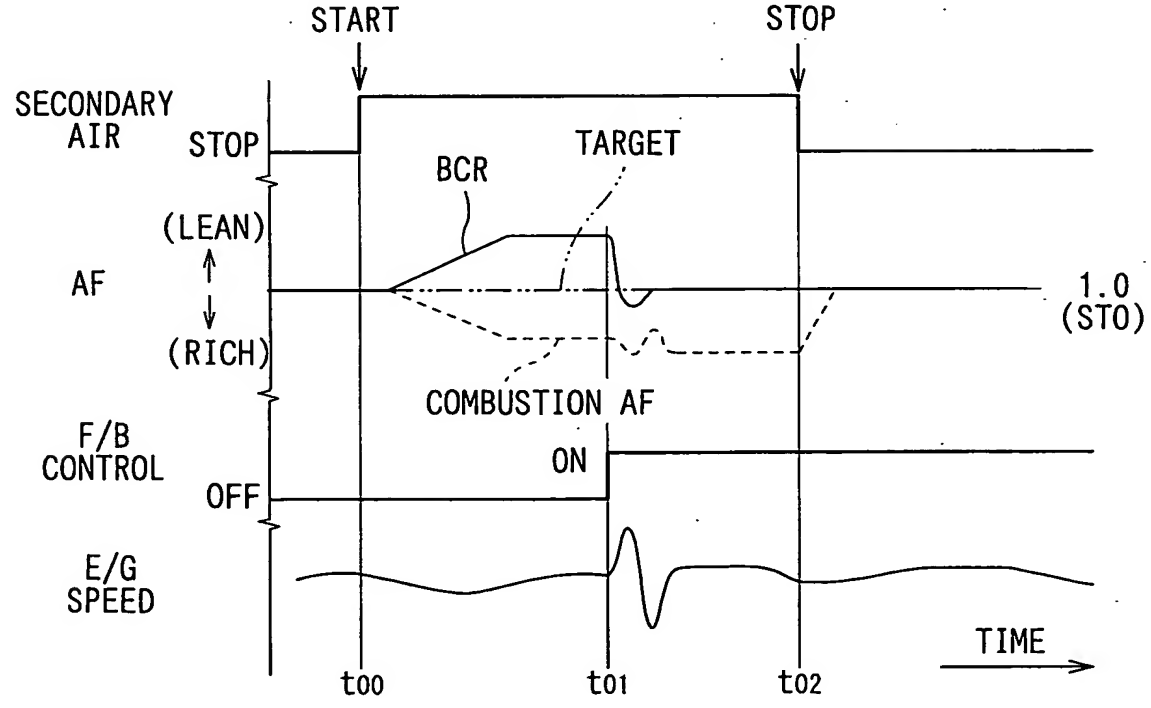
START
STOP
SECONDARY AIR
STOP
BCR
TARGET
(LEAN)
AF
(RICH)
1.0 (STO)
COMBUSTION AF
F/B CONTROL
ON
OFF
E/G SPEED
TIME
t00
t01
t02

FIG. 9

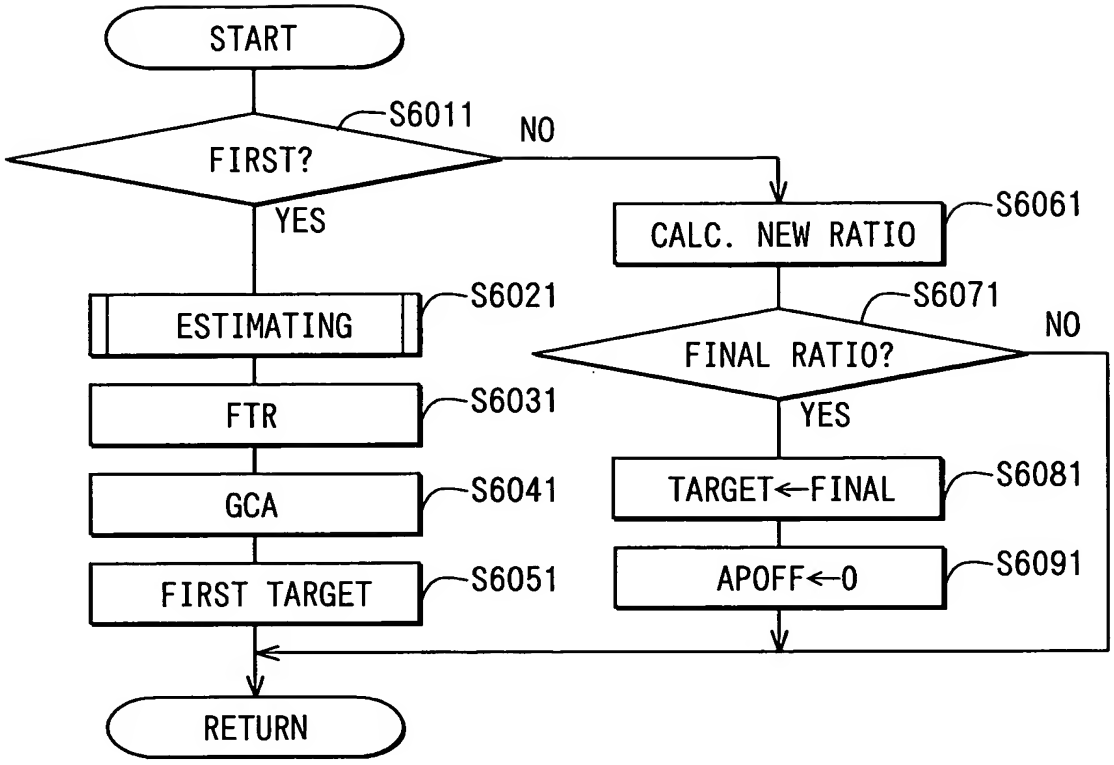
START
S6011
FIRST?
NO
YES
CALC. NEW RATIO
S6061
ESTIMATING
S6021
S6071
FINAL RATIO?
NO
FTR
S6031
YES
GCA
S6041
TARGET←FINAL
S6081
FIRST TARGET
S6051
APOFF←0
S6091
RETURN

FIG. 10A

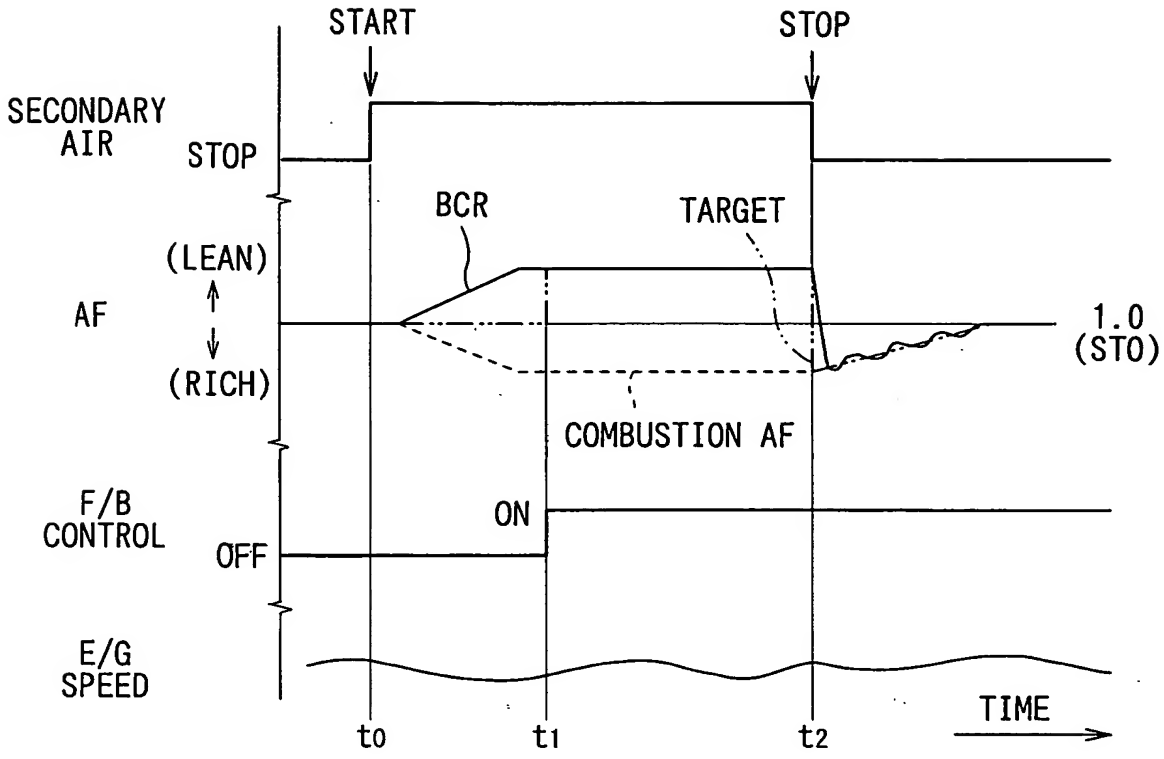

FIG. 10B

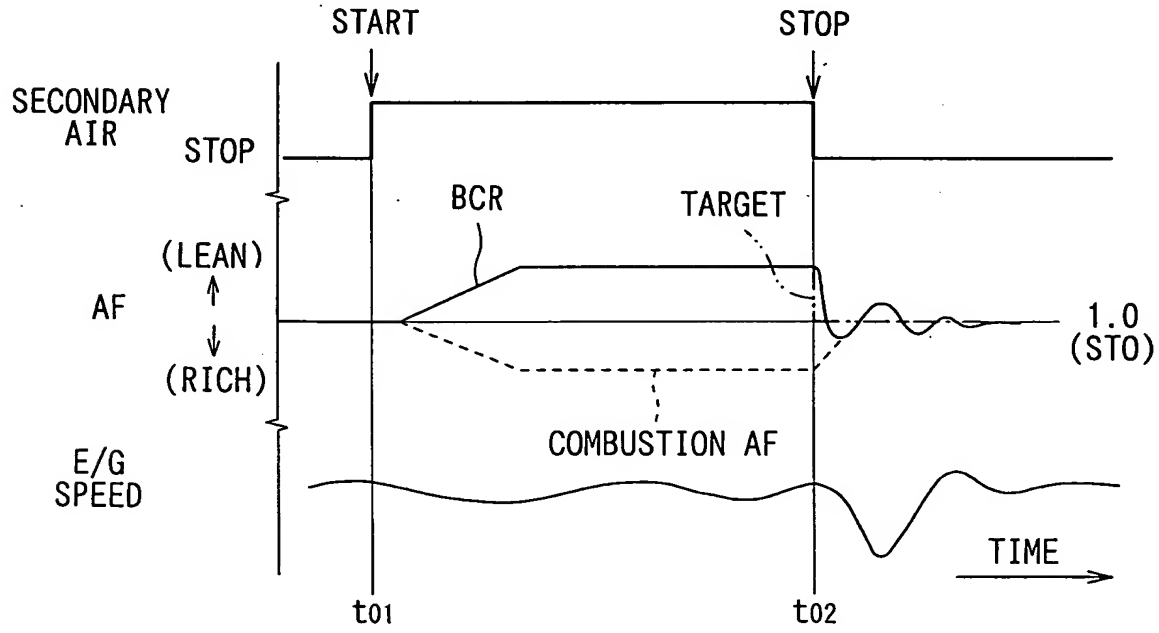

FIG. 11

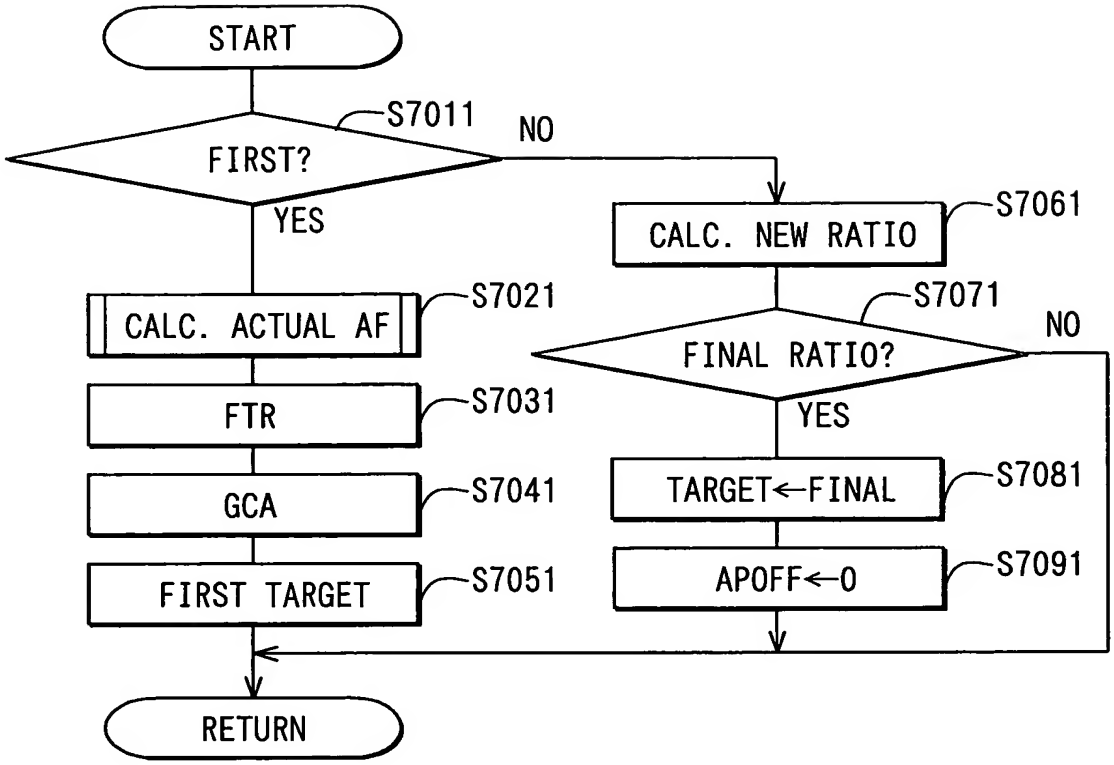
START
S7011
FIRST?
NO
YES
CALC. NEW RATIO
S7061
CALC. ACTUAL AF
S7021
S7071
FINAL RATIO?
NO
FTR
S7031
YES
GCA
S7041
TARGET←FINAL
S7081
FIRST TARGET
S7051
APOFF←0
S7091
RETURN

FIG. 12

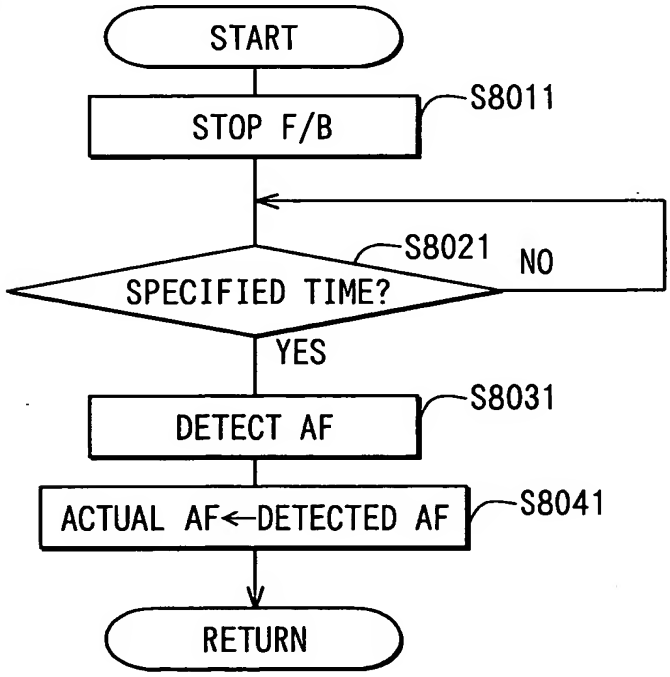
START
STOP F/B
S8011
S8021
SPECIFIED TIME?
NO
YES
DETECT AF
S8031
ACTUAL AF←DETECTED AF
S8041
RETURN

FIG. 13

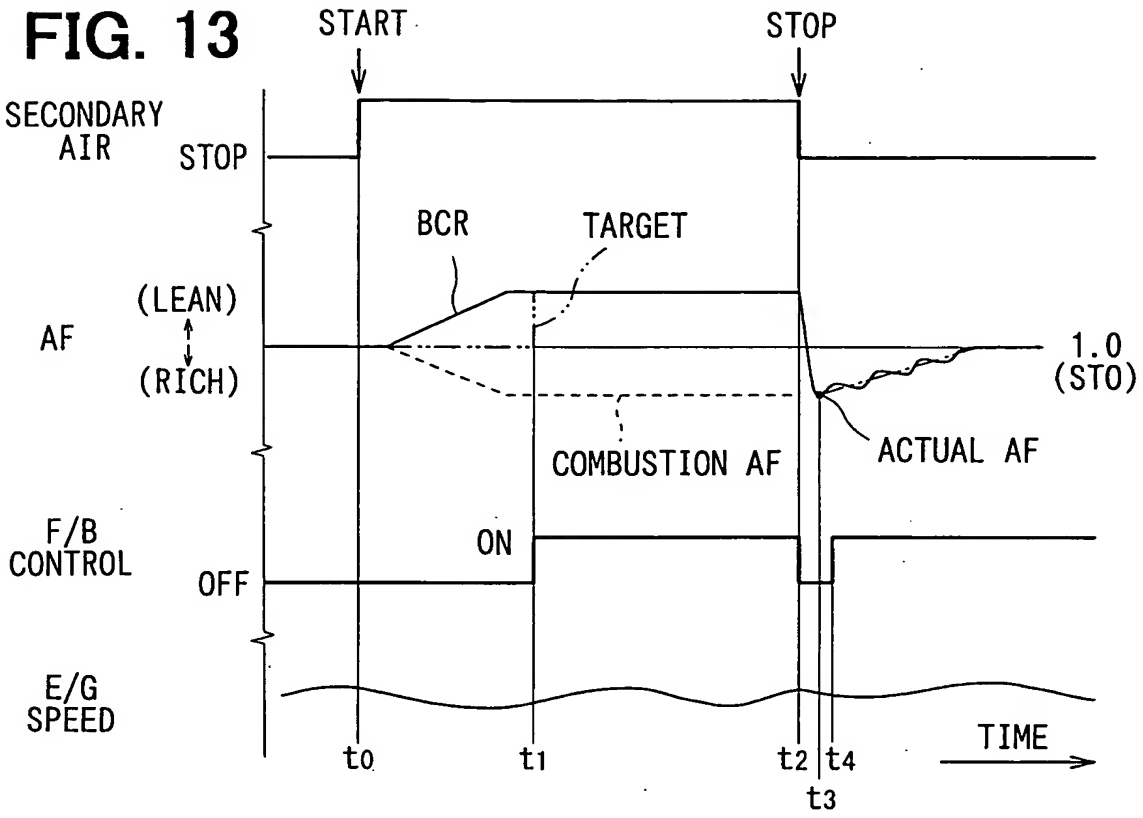
START
STOP
SECONDARY AIR
STOP
BCR
TARGET
(LEAN)
AF
(RICH)
1.0 (STO)
COMBUSTION AF
ACTUAL AF
F/B CONTROL
ON
OFF
E/G SPEED
TIME
t0
t1
t2
t3
t4

FIG. 14

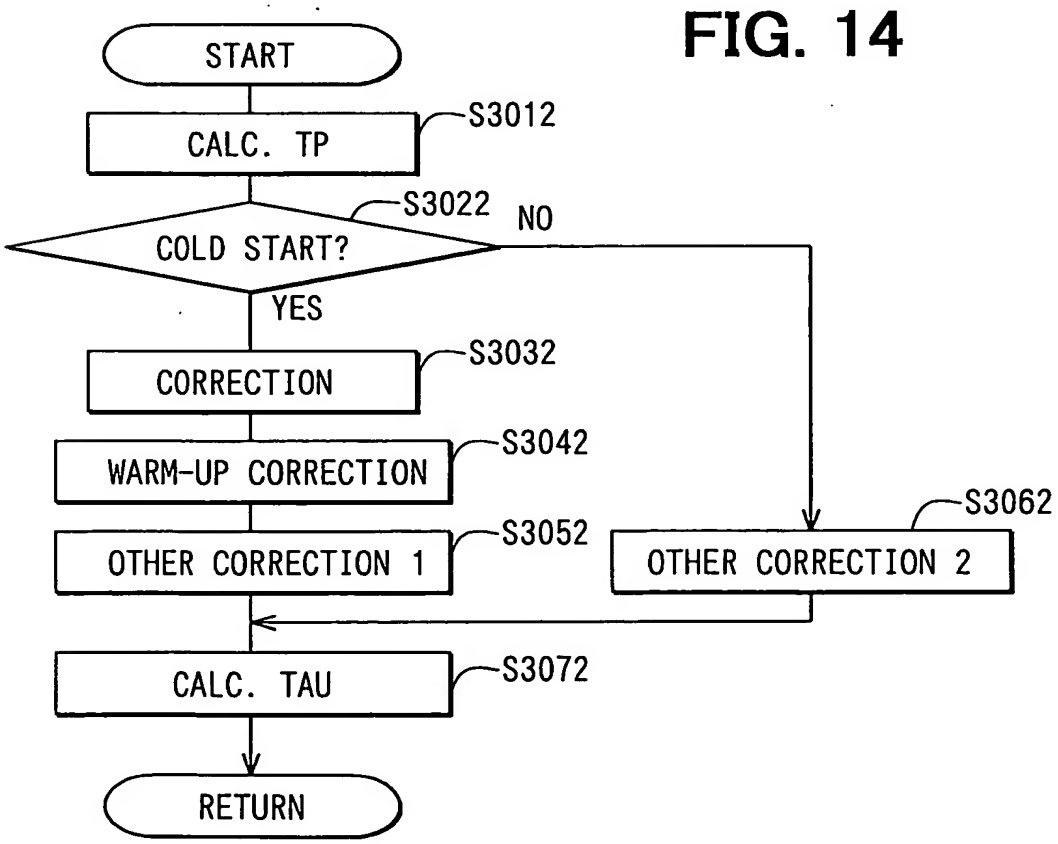
START
CALC. TP
S3012
COLD START?
S3022
NO
YES
CORRECTION
S3032
WARM-UP CORRECTION
S3042
OTHER CORRECTION 1
S3052
OTHER CORRECTION 2
S3062
CALC. TAU
S3072
RETURN

FIG. 15

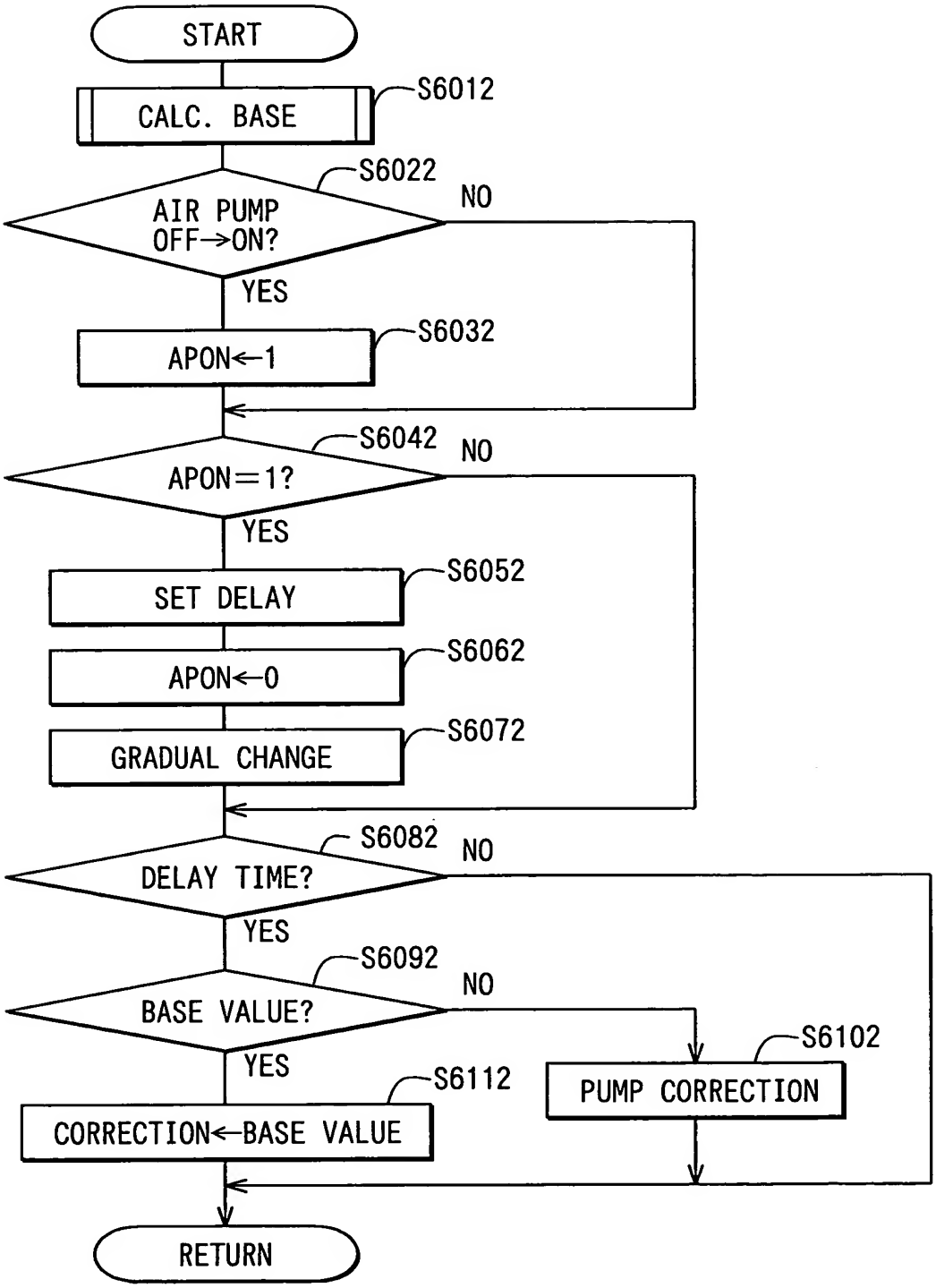
START
CALC. BASE
S6012
AIR PUMP OFF→ON?
S6022
NO
YES
APON←1
S6032
APON=1?
S6042
NO
YES
SET DELAY
S6052
APON←0
S6062
GRADUAL CHANGE
S6072
DELAY TIME?
S6082
NO
YES
BASE VALUE?
S6092
NO
YES
PUMP CORRECTION
S6102
CORRECTION←BASE VALUE
S6112
RETURN

FIG. 16A

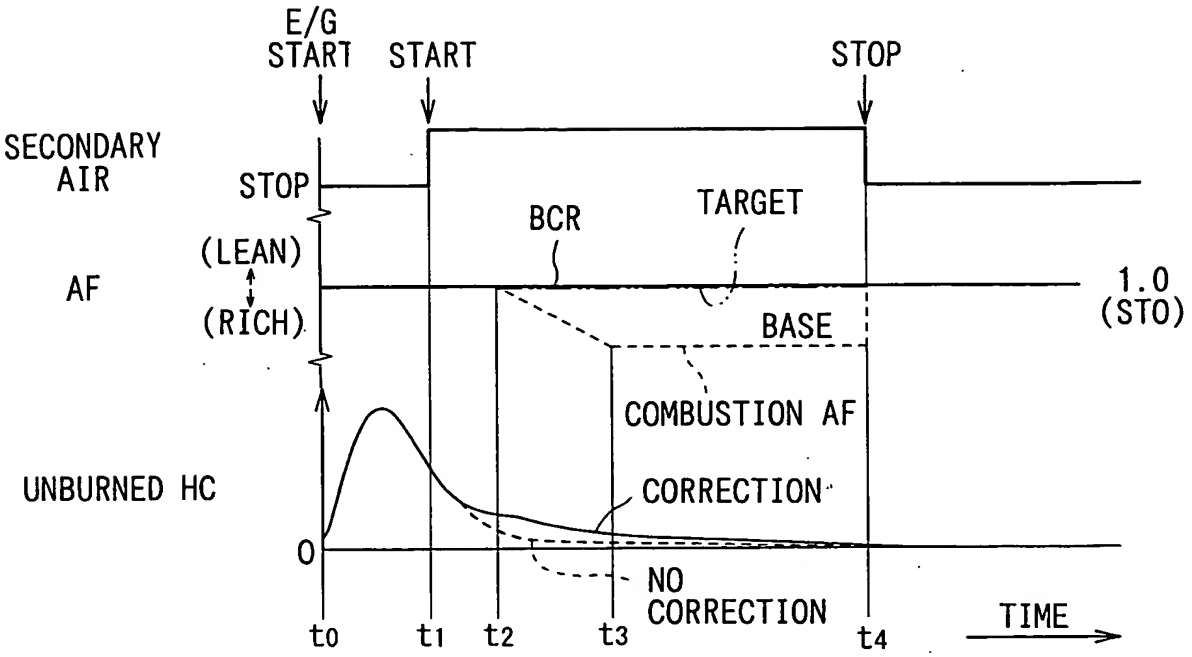

FIG. 16B

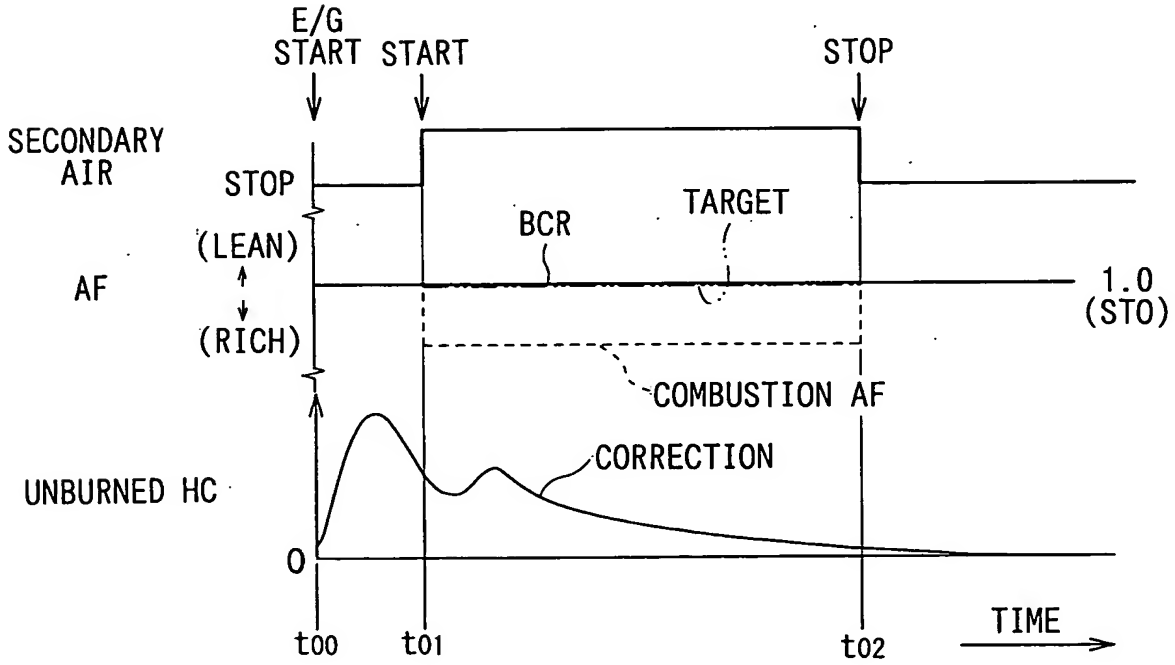

FIG. 17

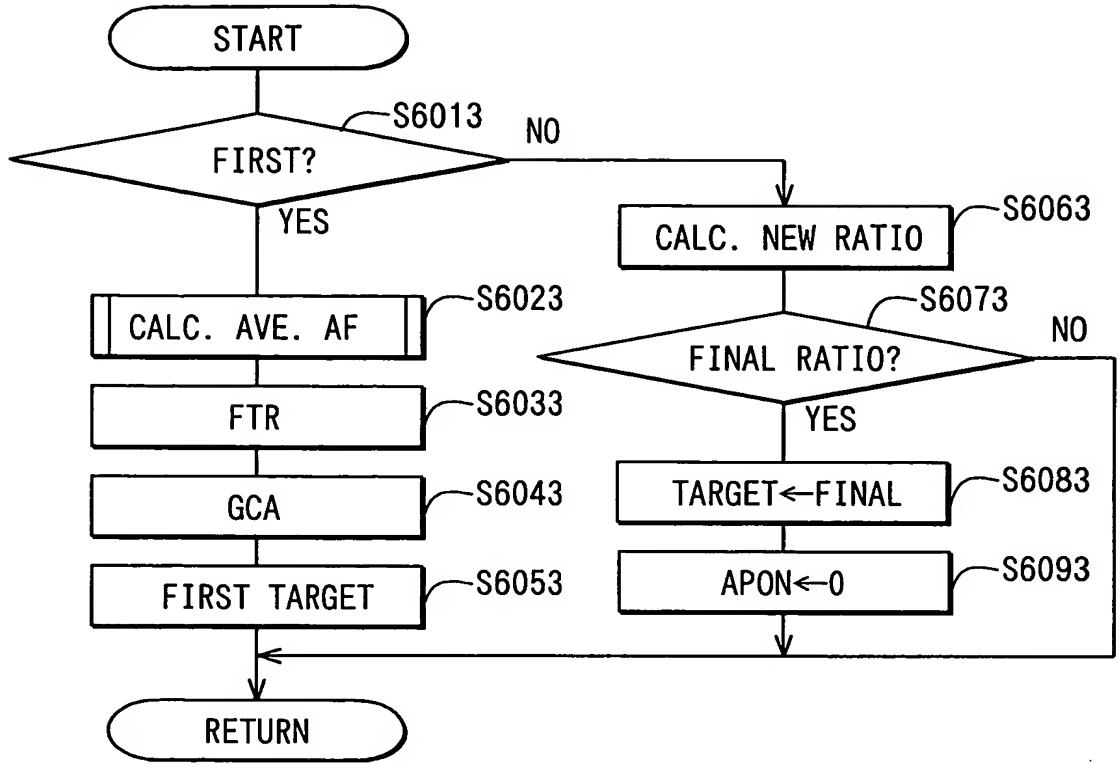
START
S6013
FIRST?
NO
YES
CALC. NEW RATIO
S6063
CALC. AVE. AF
S6023
S6073
FINAL RATIO?
NO
FTR
S6033
YES
GCA
S6043
TARGET←FINAL
S6083
FIRST TARGET
S6053
APON←0
S6093
RETURN

FIG. 19

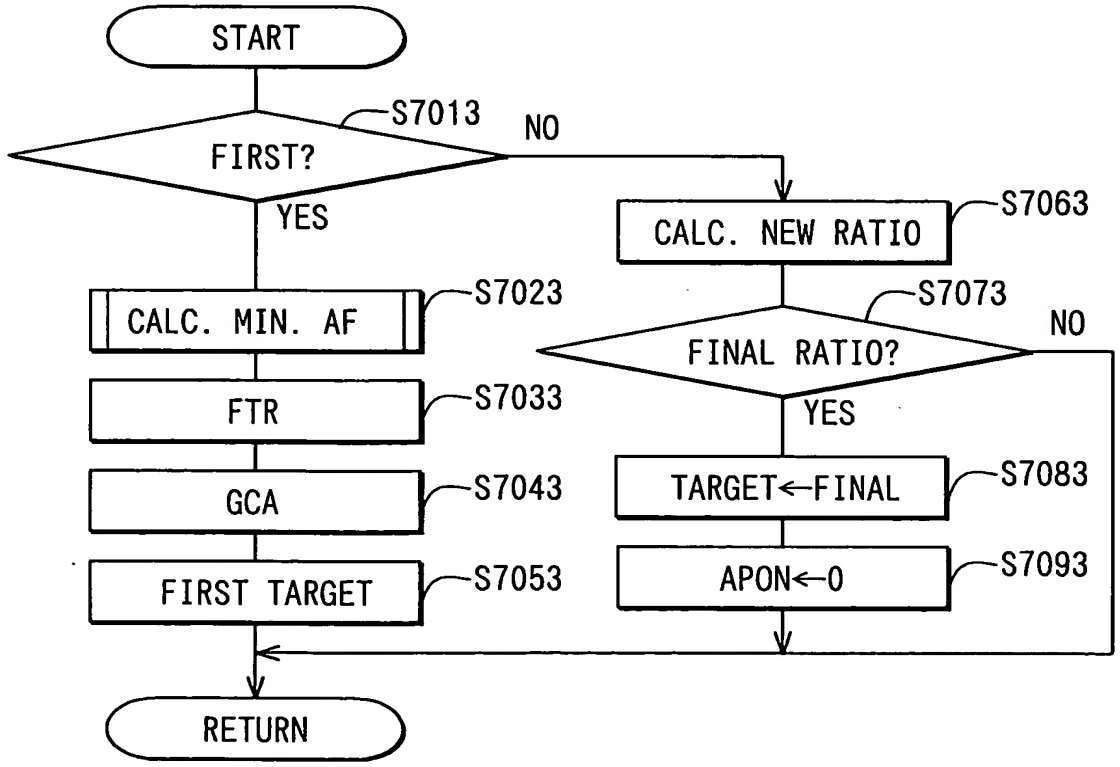
START
S7013
FIRST?
NO
YES
CALC. NEW RATIO
S7063
CALC. MIN. AF
S7023
S7073
FINAL RATIO?
NO
FTR
S7033
YES
GCA
S7043
TARGET←FINAL
S7083
FIRST TARGET
S7053
APON←0
S7093
RETURN

FIG. 18A

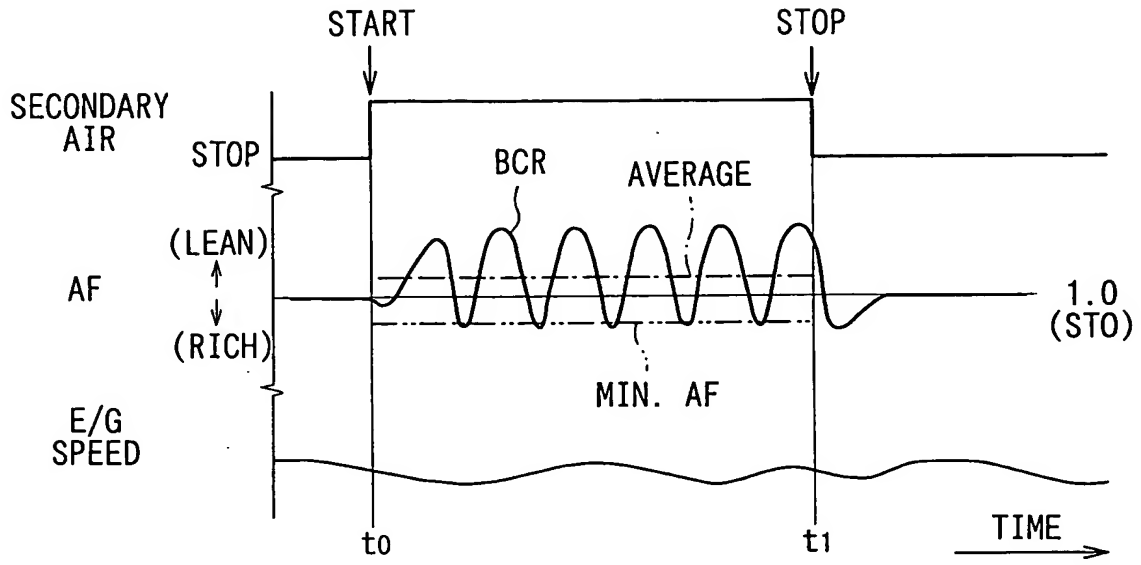

FIG. 18B